

**REMARKS**

Claims 1-29 were pending in the present application. By virtue of this response, claims 1, 21 have been cancelled, claims 2 – 7, 11, 13, 15, 22, and 24 – 29, have been amended, and new claims 30 – 40 have been added. Accordingly, claims 2 – 20, 22 – 40 are currently under consideration. Amendment and cancellation of certain claims is not to be construed as a dedication to the public of any of the subject matter of the claims as previously presented. No new matter has been added.

***Drawings***

Applicant acknowledges the Examiner's comment that this application lacks formal drawings. Applicant will submit new formal drawings when the application is allowed, as instructed by the Examiner.

***Claim Objection***

Claim 15 has been amended: "fist joint" has been replaced with "first joint" and "rotates" has been replaced with "rotate."

***Rejections under 35 U.S.C. § 102******Takayama '380***

Claims 1, 2, 9, 11, 12 and 14 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by U.S. Patent 5,624,380 to Takayama et al.

Claim 1 has been canceled. Thus, the rejection is moot.

Claim 2 requires "an image detector positioned at said **distal portion** of the **elongated body**." "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union*

*Oil Co. of California*, 814 F.2d 628, 631, 1 USPQ2d 1051, 1053 (Fed. Cir 1987). *Takayama '380* does not disclose an image detector positioned at the distal portion of the elongated body. *Takayama '380* discloses two “observation **windows 63**” at the distal end of the elongated body 61. (*Takayama '380*, column 8, lines 49 – 50) As one of ordinary skill in the art would appreciate, a typical endoscopic device utilizes fiber optic image transmission guides to direct light coming through the observation windows to the proximal end of the device, such as the example shown in FIG. 5 in Wilk (5,368,015). *Takayama '380* does not teach or suggest the placement of an image detector (e.g., CCD camera, etc.) behind the observation window.

Furthermore, *Takayama '380* discloses the placement of the “observation **unit 65**, e.g., a CCD” on the manipulator 64b, which teaches away from placement of an image detector at the distal portion of the elongated body.

Claim 11 requires robotic arms to be “**slideably** positioned within one of said chambers.” The manipulators 64a 64b and 64c disclosed in *Takayama '380* are “**fixed** to the distal end face of the industrial endoscope.” (*Takayama '380*, column 8, line 54) Not only *Takayama '380* does not disclose slideably positioned arms, *Takayama '380* teaches away from this limitation by requiring the robotic arms be “fixed” to the distal end face of the elongated body.

Claim 12 requires a **camera** attached to the **distal end** of the **elongated tubular body**. As discussed above, *Takayama '380* does not teach or suggest placement of a camera at the “distal end” of the elongated tubular body.

Since *Takayama '380* does not teach or suggest all the limitations in claims 2, 9, 11, 12 and 14, Applicants respectfully request that the rejection under 35 U.S.C. § 102 be withdrawn.

### ***Wilk '015***

Claims 11, 12, 21-25, 28 and 29 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by U.S. Patent 5,368,015 to Wilk.

Claim 11 as amended requires “one of said plurality of robotic arms comprises two or more joints and two or more arm sections.” The arms 196, 198 in *Wilk '015*, as shown in FIG. 5, do not have arm sections nor joints. In fact the arms 196 and 198 are “flexible,” which teaches away from having arm sections.

Claim 12 requires “a **camera** attached to said **distal end** of said elongated tubular body.” *Wilk '015* does not teach or suggest the placement of a camera at the distal end of the endoscope insertion member 170. In fact, *Wilk '015* teaches away from placement of a camera at the distal end of the elongated tubular body. As shown in FIG. 5, fiber optic image transmission guides 178, 180 extends from the focusing lens 182, 184 to respective camera 186, 188, which are “connected” to the endoscope insertion member 170. (*Wilk '015*, column 8, lines 3 – 8)

Claim 21 has been canceled. Thus, the rejection is moot.

Claim 22 requires “an **image detector** positioned at a **distal end** of said robotic surgical device.” As discussed above, *Wilk '015* does not teach or suggest the placement of an image detector at the distal end of the robotic surgical device.

Claim 25 further requires a robotic arm comprising two or more joints. *Wilk '015* does not teach or suggest this limitation. As discussed in FIG. 5 in *Wilk '015*, *Wilk* utilizes flexible arms which does not have joints.

In view of the above remarks, Applicants respectfully request that the rejection under 35 U.S.C. § 102 be withdrawn.

### ***Rejections under 35 U.S.C. § 103***

#### ***Takayama '380 in view of Wilk '015***

Claims 3-5 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent 5,624,380 to Takayama et al. in view of U.S. Patent 5,368,015 to Wilk.

“To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.” *MPEP 2143 Basis Requirements of a Prima Facie Case of Obviousness*.

Neither *Takayama '380* nor *Wilk '015* suggests combining the deployable robotic arms from *Wilk '015* with the industrial endoscope disclosed in *Takayama '380*. “The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).” *MPEP 2143*. The Examiner has not "cited" any evidence of a motivation to combine the references – other than the Examiner's own conclusory statements applied in hindsight. General conclusions concerning what is "basic knowledge" or "common sense" to one of ordinary skill in the art without specific factual findings and some concrete evidence in the record to support these findings will not support an obviousness rejection. See *In re Thrift*, 298 F.3d 1357, at 1364, 63 USPQ2d 2002, 2006 (Fed. Cir. 2002), *In re Lee*, 277 F.3d 1338, 1345, 61 USPQ2d 1430, 1434-35 (Fed. Cir. 2002).

In addition, the manipulators from *Takayama* are “fixed” to the distal end of the industrial endoscope, which teaches away from deploying the manipulators from the body of the endoscope. (*Takayama '380*, column 8, line 54)

Furthermore, neither *Takayama '380* nor *Wilk '015* teaches or suggests placement of an image detector at the distal portion of the elongated body, as discussed above.

Since none of the basic requirements of a prima facie case of obviousness are met, the Examiner is therefore respectfully requested to withdraw the present obviousness rejection.

***Takayama '380 in view of Brock***

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent 5,624,380 to Takayama et al. in view of U.S. Patent No. 6,197,017 to Brock et al.

As noted by the Examiner, *Takayama* '380 does not disclose details of the joints for the arms. *Brock*, discloses a master robot 12 which is manipulated by the surgeon to control a slave robot 16, as shown in FIG. 1 in *Brock*. (*Brock*, column 3, lines 48 – 56) As shown in FIG. 1 in *Brock*, the rotation joints (FIG. 1, #42), the elbow joints (FIG. 1, #44), free joints (FIG. 1, #'s 46 & 48), and axial rotation joints (FIG. 1, #50), are configured to position a single robotic arm which extends into the patient's body 22. Applicant would like to point out that all these joints are located outside the patient's body, which teaches away from integration multiple joints on multiple robotic arms that extends from a single elongated body is being inserted into the patient's body.

Neither *Takayama* '380 nor *Brock* teaches or suggests implementing the joints disclosed in *Brock* on the arms shown in *Takayama*. The Examiner has not "cited" any evidence of a motivation to combine these references – other than the Examiner's own conclusory statements applied in hindsight. General conclusions concerning what is "basic knowledge" or "common sense" to one of ordinary skill in the art without specific factual findings and some concrete evidence in the record to support these findings will not support an obviousness rejection. See *In re Thrift*, 298 F.3d 1357, at 1364, 63 USPQ2d 2002, 2006 (Fed. Cir. 2002), *In re Lee*, 277 F.3d 1338, 1345, 61 USPQ2d 1430, 1434-35 (Fed. Cir. 2002).

Applicant would also like to point out that the "manipulators" disclosed in *Takayama* '380 comprises a "flexible" tube having a plurality of flex portion provided therealong, a plurality of actuators made of "shape memory alloy" and respectively provided near the flex portion to correspond to the flex portions. This configuration teaches away from utilizing the joints shown in FIG. 1 in *Brock*. Moreover, as illustrated in FIG. 3 in *Takayama* '380, the flex portion 9 having a corresponding fixing pin 8a cannot accommodate the joints disclosed in *Brock*. Thus, *Takayama* '380 also teaches away from combining *Brock* with *Takayama* '380.

Claim 7 further requires "said second joint permits a distal end of said forearm to converge toward said central axis of said elongated body while said rear-arm is expanded radially,

said plurality of robotic arms are configured for deployment inside a patient's body." The robotic device disclosed in *Brock* has a single arm positioned in the patient's body as shown in FIG. 1 in *Brock*. Thus, it teaches away from rotating two separate arms in side a patient's body. *Takayama* '380 teaches a single "flexible" tube. The segments of the flexible tube are very short and interlinked by a fixing pin as illustrated in FIG. 3. This configuration of the segment interface prevents one segment to converge toward a central axis of the elongated body while an adjacent segment is expanded radically. Therefore, *Takayama* '380 does not disclose the limitations claimed in Claim 7.

***Takayama '380 in view of Brock further in view of Wilk '015***

Claim 8 is rejected under U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent 5,624,380 to Takayama in view of U.S. Patent No. 6,197,017 to Brock et al. as applied to claim 7 above, and further in view of U.S. Patent 5,368,015 to Wilk.

As disclosed above, *Takayama* '380 and *Brock* in combination does not render claims 6 and 7 obvious. *Wilk* '015 does not cure such defects. Thus, *Takayama* '380, *Brock* and *Wilk* '015, individually or in combination, do not render Claim 8 unpatentable.

***Wilk '015***

Claims 13 and 18 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent 5,368,015 to Wilk.

As discussed above, claim 11 is not anticipated by *Wilk* '015. Since claim 13 is dependent upon claim 11, and therefore includes all the limitations of claim 11, *Wilk* '015 does not teach or suggest all the claim limitations.

Furthermore, FIGS. 1 and 5 in *Wilk* '015 suggest that the endoscopic instruments 196 and 198 needs to approach the gallbladder at an angle relative to each other. If the diameter of the insertion member 170 is small, the tips of the endoscopic instruments 196, 198 will not be able to flex towards each other as illustrated in FIG. 5 in *Wilk* '015. Therefore, *Wilk* '015 teaches away

from making the diameter of the insertion member small. Furthermore, the optical elements 182, 176, 184 are placed parallel with the endoscopic instruments 196, 198, which further teaches a way from configuring the device with a small diameter.

Claim 18 is dependent upon claims 11, 15, 16, and 17. Since *Wilk '015* does not teach or suggest all the limitations in Claim 18, therefore, *Wilk '015* does not render Claim 18 obvious. In addition, as discussed above, *Wilk* teaches way from implementing a small diameter device.

***Wilk '015 in view of Takayama '380***

Claim 14 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent 5,368,015 to *Wilk* as applied to claim 11 above and further in view of U.S. Patent 5,624,380 to *Takayama et al.*

As discussed earlier, neither *Wilk '015* nor *Takayama '380* teaches or suggests a motivation to combine these two references. In addition, *Takayama '380* teaches away from requiring slideably positioned arms in the elongated body, and instead requires the robotic arms to be fixed to the distal end face of the elongated body. Furthermore, *Takayama '380* does not provide chambers to house the arms within the body of the elongated body.

***Wilk '015 in view of Takayama '380 further in view of Brock***

Claims 15-17, 19 and 20 are rejected under U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent 5,368,015 to *Wilk* in view of U.S. Patent 5,624,380 to *Takayama et al.* and further in view of U.S. Patent 6,197,017 to *Brock et al.*

“The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re *Vaech*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).” MPEP 2143. The Examiner has not "cited" any evidence of a motivation to combine the references – other than the Examiner's own conclusory statements applied in hindsight. General conclusions concerning what is "basic knowledge" or "common sense" to one of ordinary skill in the art without specific factual findings and some

concrete evidence in the record to support these findings will not support an obviousness rejection. See *In re Thrift*, 298 F.3d 1357, at 1364, 63 USPQ2d 2002, 2006 (Fed. Cir. 2002), *In re Lee*, 277 F.3d 1338, 1345, 61 USPQ2d 1430, 1434-35 (Fed. Cir. 2002). Furthermore, as discussed above, *Takayama '380* teaches away from combining the features disclosed in *Takayama '380* with those disclosed in either *Wilk '015* or *Brock*.

With regards to claim 16, neither *Wilk '015*, *Takayama '380*, nor *Brock*, discloses a camera attached to the distal end of the elongated tubular body.

***Wilk '015 in view of Brock***

Claim 26 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent 5,368,015 to Wilk in view of U.S. Patent 6,197,017 to Brock et al.

Applicant would like to point out that the shoulder joint and elbow joint disclosed in *Brock* are located outside the patient's body. The joints are utilized to control a single elongated arm to enter the patient's body, as shown in FIG. 1 in *Brock*. This disclosure in *Brock* teaches away from deploying a plurality of robotic arms inside a patient's body through the distal end of a robotic surgical device wherein shoulder joints and elbow joints are implemented on the robotic arms deployed inside a patient's body.

Furthermore, neither *Wilk '015* nor *Brock* teaches or suggests an image detector positioned at a distal end of the robotic surgical device.

The Examiner has not "cited" any evidence of a motivation to combine *Brock* with *Wilk '015* – other than the Examiner's own conclusory statements applied in hindsight. General conclusions concerning what is "basic knowledge" or "common sense" to one of ordinary skill in the art without specific factual findings and some concrete evidence in the record to support these findings will not support an obviousness rejection. See *In re Thrift*, 298 F.3d 1357, at 1364, 63 USPQ2d 2002, 2006 (Fed. Cir. 2002), *In re Lee*, 277 F.3d 1338, 1345, 61 USPQ2d 1430, 1434-35 (Fed. Cir. 2002).



In view of the above remarks, Applicants respectfully request that all the rejections under 35 U.S.C. § 103 be withdrawn.

***Allowable Subject Matter***

Claim 27 have been amended to rewrite the claim in independent form including all the limitation of the base claims and any intervening claims, since the Examiner notes on page 6 of the Office Action that these claims would be allowable if so written. Claim 27 has been so written as indicated and is in condition for allowance.

***New Claims***

***Claim 30***

Neither *Takayama '380*, *Wilk '015* nor *Brock* discloses an image detector positioned at the distal portion of the elongated body.

***Claim 31***

Neither *Takayama '380*, *Wilk '015* nor *Brock* discloses an image detector positioned at the distal end of the elongated body.

***Claims 32 – 34***

Claims 32 – 37 require one or more of the arms in the surgical device to support axial rotation. Axial rotation of the arms in the robotic device is disclosed throughout the specification of the present application (e.g., FIGS. 9A, 9B).

***Claims 35 – 39***

Claims 35 – 39 are dependent on claim 27, which the Examiner has indicated in the Office Action that it is allowable as amended. The limitations in claims 35 and 36 are disclosed in

paragraph [0072], FIGS. 9A and 9B in the specification. The limitation claim 37 is disclosed in paragraph [0049] of the specification. The limitation in claim 38 is disclosed in paragraph [0046] of the specification. The limitation in claim 39 is disclosed in paragraph [0056] of the specification.

#### **Claim 40**

Claim 40 is dependent on claim 2, which the applicant believes is patentable as amended. The limitations in claim 40 are supported throughout the specification (e.g., paragraph [0055], paragraph [0071], FIGS. 1D, 8, 12A, and 12B).

**CONCLUSION**

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. **203782000400**. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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Respectfully submitted,

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